

**Expert Report and Vegetation Root Study of  
The Hero Lands Co., L.L.C. Properties in the Stella Oil Field  
Plaquemines Parish, Louisiana  
Luther F. Holloway**

*Hero Lands Co., L.L.C*  
*versus*  
*Chevron U.S.A., Inc. et al.*  
Docket 64-320  
25<sup>TH</sup> Judicial District Court  
Parish of Plaquemines  
State of Louisiana

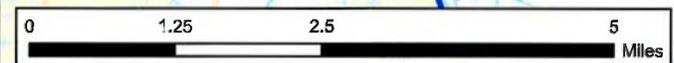
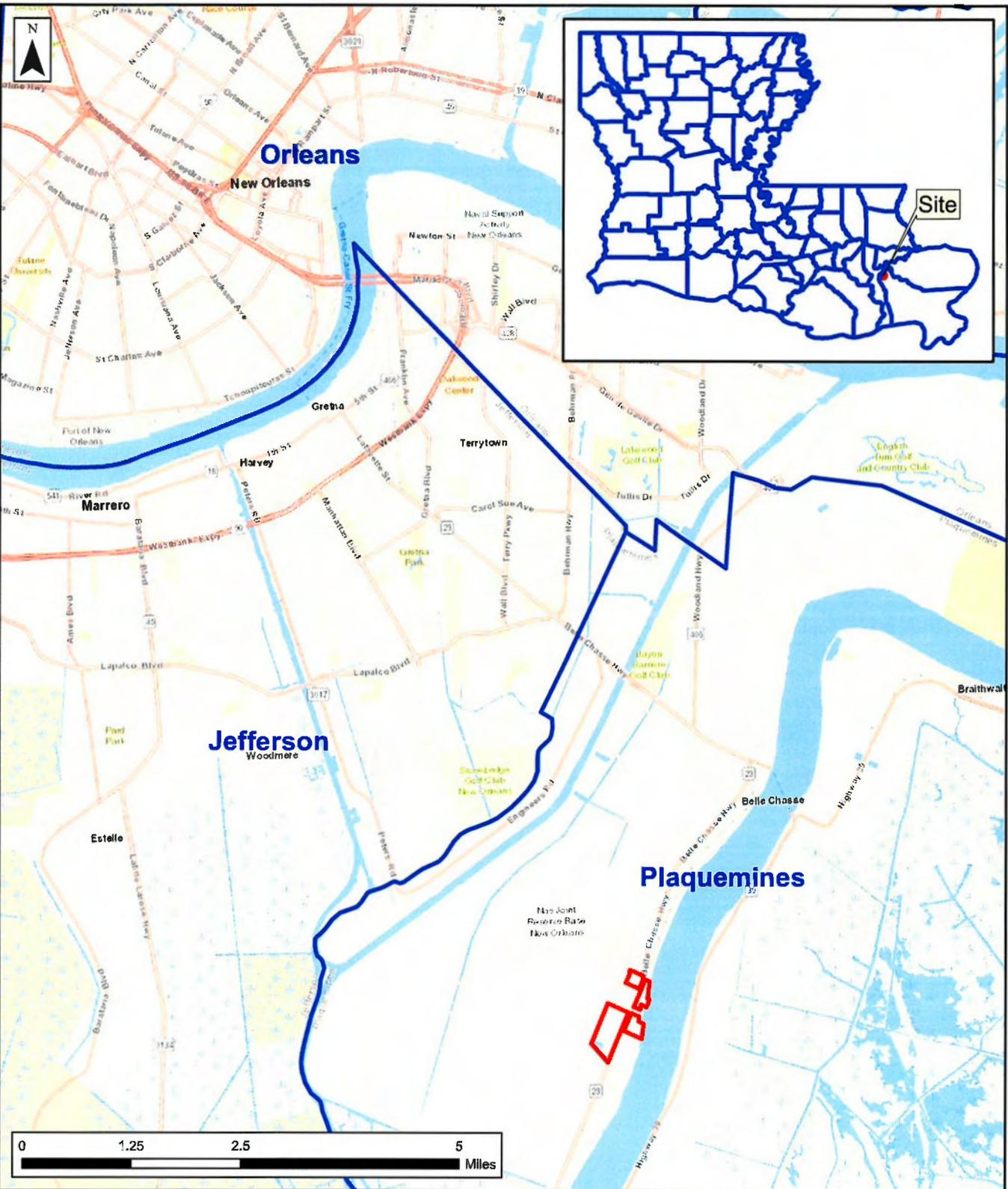
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Appendix A  
Figures

DRAWN BY: MMG

C:\Users\Aaron.Jones\Desktop\ERM\Projects\Hero\_Lands\GIS\A1\_Site\_Location\_Map.mxd, REVISED: 04/08/2020, SCALE: 1:100,000 when printed at 8.5x11



- Property
- Parish Boundaries

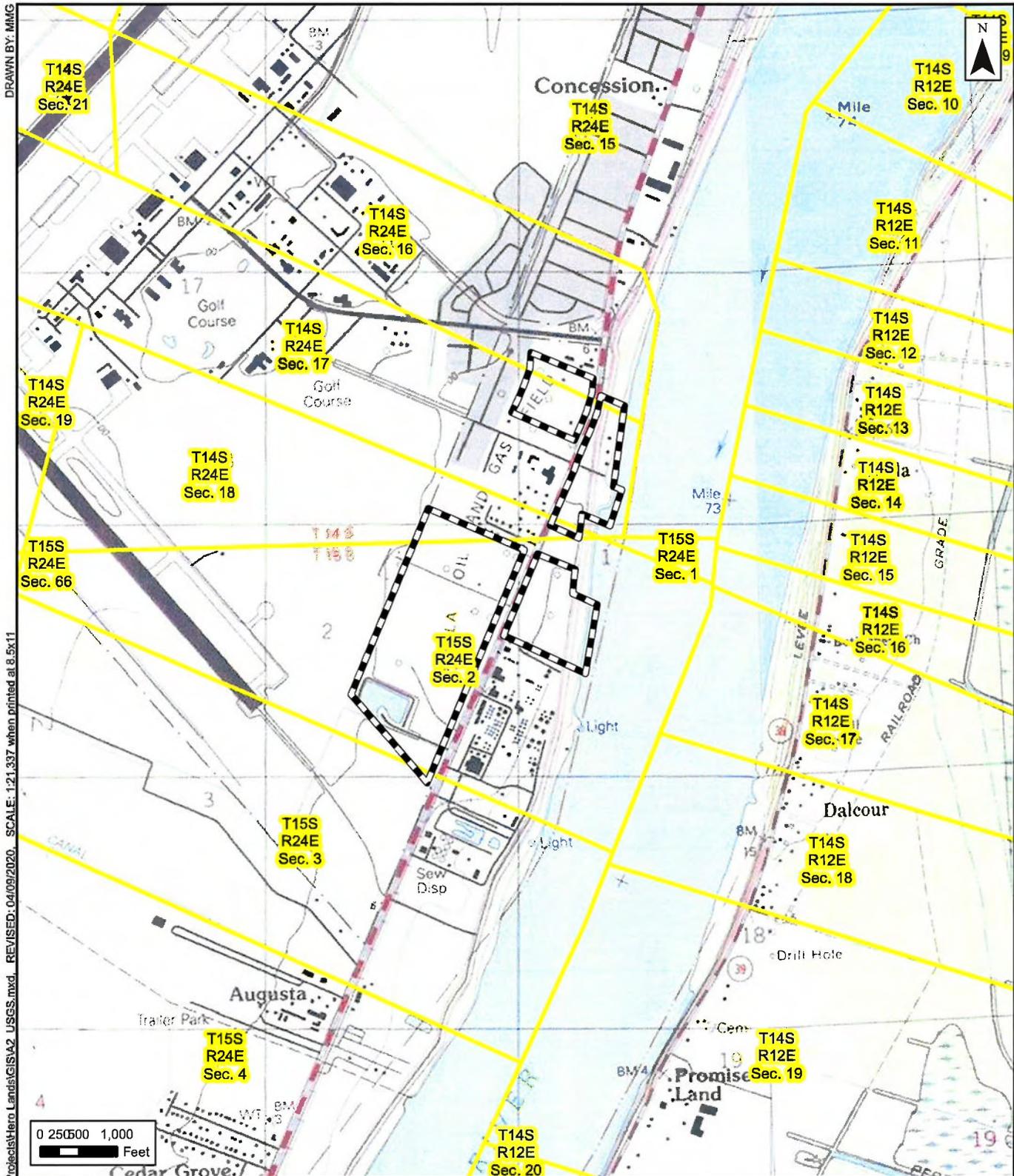
**Figure A-1**  
**Site Location Map**

Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
9269 Hwy 124  
Harrisonburg, LA 71340  
(318) 744-5638

Notes:  
World Imagery Basemap via ArcGIS Online.

Source: Esri - ArcGIS Online; NAD 1983 UTM Zone 15N



DRAWN BY: MMG

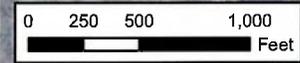
C:\Users\Aaron.Jones\Desktop\ERM Projects\Hero Lands\GIS\A2\_USGS.mxd, REVISED: 04/09/2020, SCALE: 1:21,337 when printed at 8.5x11  
 Notes:  
 World Imagery Basemap via ArcGIS Online.  
 Source: Esri - ArcGIS Online; NAD 1983 UTM Zone 15N

**Figure A-2**  
**USGS Topographic Map & Public Land Survey Sections**  
 Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
 Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
 9269 Hwy 124  
 Harrisonburg, LA 71340  
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DRAWN BY: MMG

C:\Users\Aaron.Jones\Desktop\ERM Projects\Hero Lands\GIS\A3 High Res Basemap.mxd, REVISED: 04/09/2020, SCALE: 1:10,000 when printed at 8.5x11



 Property

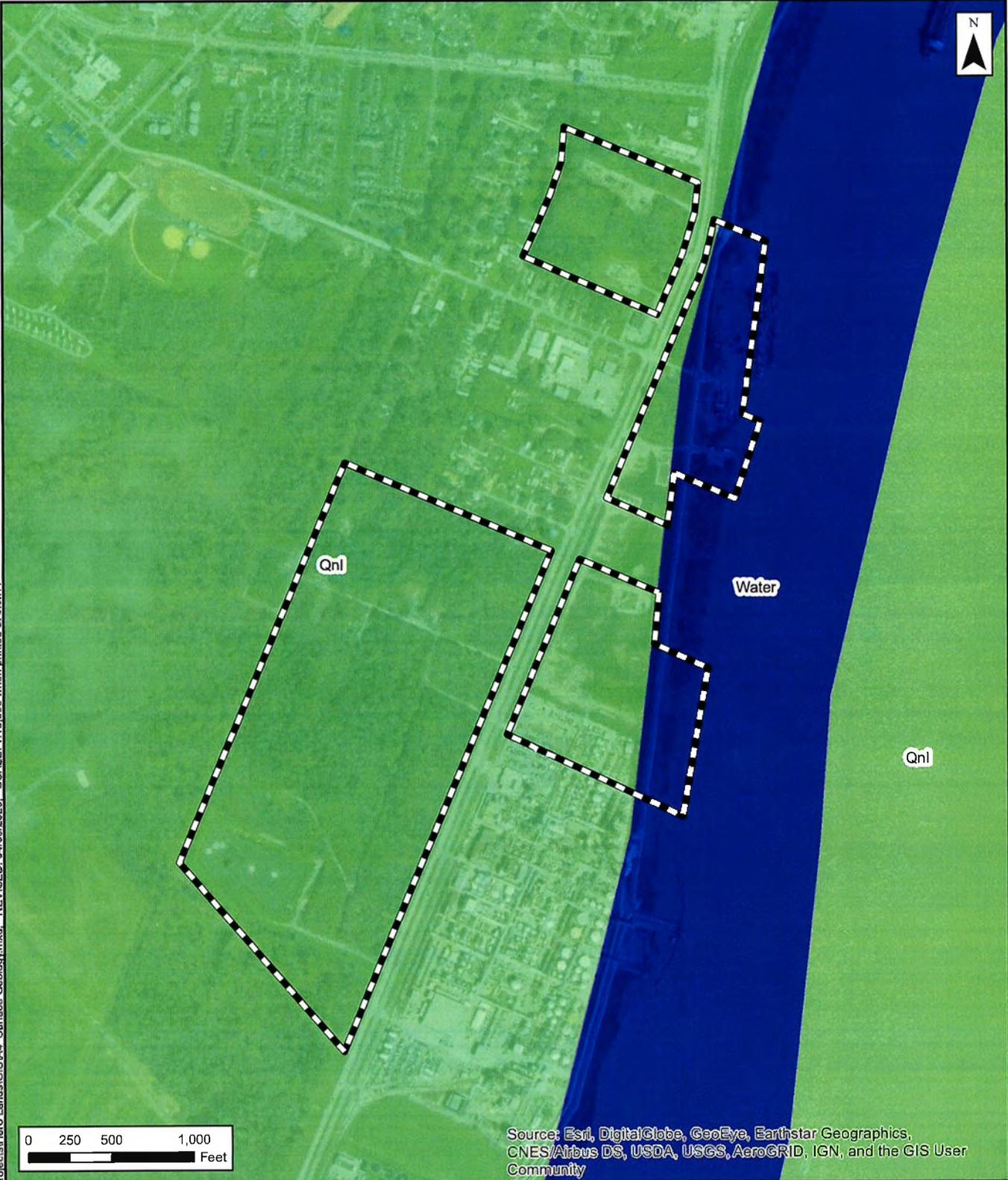
**Figure A-3**

**High Resolution Imagery Basemap**

Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
9269 Hwy 124  
Harrisonburg, LA 71340  
(318) 744-5638

Notes:  
World Imagery Basemap via ArcGIS Online.  
Source: Esri - ArcGIS Online; NAD 1983 UTM Zone 15N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

-  Property
-  Qnl - Quaternary Natural Levee
-  Water

**Figure A-4**  
**Surface Geology**

Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
Stella Oil & Gas Field, Plaquemines Parish, Louisiana

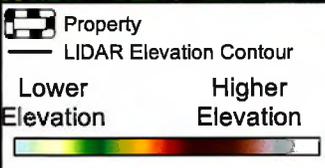
Holloway Environmental Services, Inc.  
9269 Hwy 124  
Harrisonburg, LA 71340  
(318) 744-5638

Notes:  
USGS, Biological Resources Division's National Wetlands Research Center, 1998, Digital Overlay of the Geologic Map of Louisiana. Imagery basemap via ArcGIS Online.



DRAWN BY: MMG

C:\Users\Aaron\_Jones\Desktop\ERM Projects\Hero Lands\GIS\AS LIDAR Elevation Model.mxd... REVISED: 04/15/2020... SCALE: 1:10,000 when printed at 8.5x11



**Figure A-5**  
**LIDAR Elevation Model**  
 Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
 Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
 9269 HWY 124  
 Harrisonburg, LA 71340  
 (318) 744-5638

Notes:  
 Elevation model based on LIDAR data from LSU Atlas.

Source: Esri - ArcGIS Online; NAD 1983 UTM Zone 15N



- Property
- CV - Carville, Cancienne, & Schriever soils
- Cm - Cancienne silt loam
- Ra - Rita mucky clay
- Sh - Schriever silty clay loam
- Sk - Schriever clay
- Ub - Urban land
- Va - Vacherie silt loam
- W - Water

**Figure A-6**  
**USDA Surface Soil Types**  
 Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
 Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
 9269 Hwy 124  
 Harrisonburg, LA 71340  
 (318) 744-5638

Notes:  
 Soil data from USDA Soil Data Mart  
 (<http://soildatamart.nrcs.usda.gov>).  
 Imagery Basemap via ArcGIS Online



DRAWN BY: MMG

C:\Users\Aaron.Jones\Desktop\ERM Projects\Hero Lands\GIS\A7 RootStudy Locations.mxd REVISED: 04/10/2020 SCALE: 1:4,500 when printed at 8.5x11

- Property
- Tree Root Study Location

**Figure A-7**  
**Root Study Locations**

Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
9269 Hwy 124  
Harrisonburg, LA 71340  
(318) 744-5638

Notes:  
September 12, 2017 aerial from  
USGS Earth Explorer  
(<https://earthexplorer.usgs.gov/>)

Source: Esri - ArcGIS Online; NAD 1983 UTM Zone 15N



-  Property
-  Herbaceous Root Location

**Figure A-8**  
**Herbaceous Study Locations**  
 Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc. et al.  
 Stella Oil & Gas Field, Plaquemines Parish, Louisiana

Holloway Environmental Services, Inc.  
 9269 Hwy 124  
 Harrisonburg, LA 71340  
 (318) 744-5638

Notes:  
 September 12, 2017 aerial from  
 USGS Earth Explorer  
 (<https://earthexplorer.usgs.gov/>)

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**Appendix B  
Photographs**

Photo B-1. Crown (center tree) of Water Oak (Tree T-01)



Photo B-2. Bole of Tree T-01



Photo B-3. Vegetation facing E at Tree-01



Photo B-4. Root distribution shown by flags around Tree T-01



Photo B-5. Roots extending from Tree T-01



Photo B-6. Crown of Sweetgum (Tree T-02)



Photo B-7. Bole of Tree T-02



Photo B-8. Vegetation facing E at Tree T-02



**Photo B-9. Flags showing root distribution around Tree T-02**



**Photo B-10. Deepest root at Tree T-02**



Photo B-11. Crown of Sugarberry (Tree T-03)



Photo B-12. Bole of Tree T-03



Photo B-13. View of vegetation facing S at Tree T-03



Photo B-14. Flags denoting root distribution around Tree T-03



Photo B-15. Deepest root on Tree T-03



Photo B-16. Crown of American Elm (Tree T-04)



Photo B-17. Bole of Tree T-04



Photo B-18. Vegetation at Tree T-04 facing S



Photo B-19. Flags denoting root distribution around Tree T-04



Photo B-20. Deep root from Tree T-04



Photo B-21. Crown of Box Elder (Tree T-05)



Photo B-22. Bole of Tree T-05



Photo B-23. Vegetation at T-05 facing S



Photo B-24. Flags denoting distribution of roots around T-05



Photo B-25. Deepest root (center of frame) on T-05

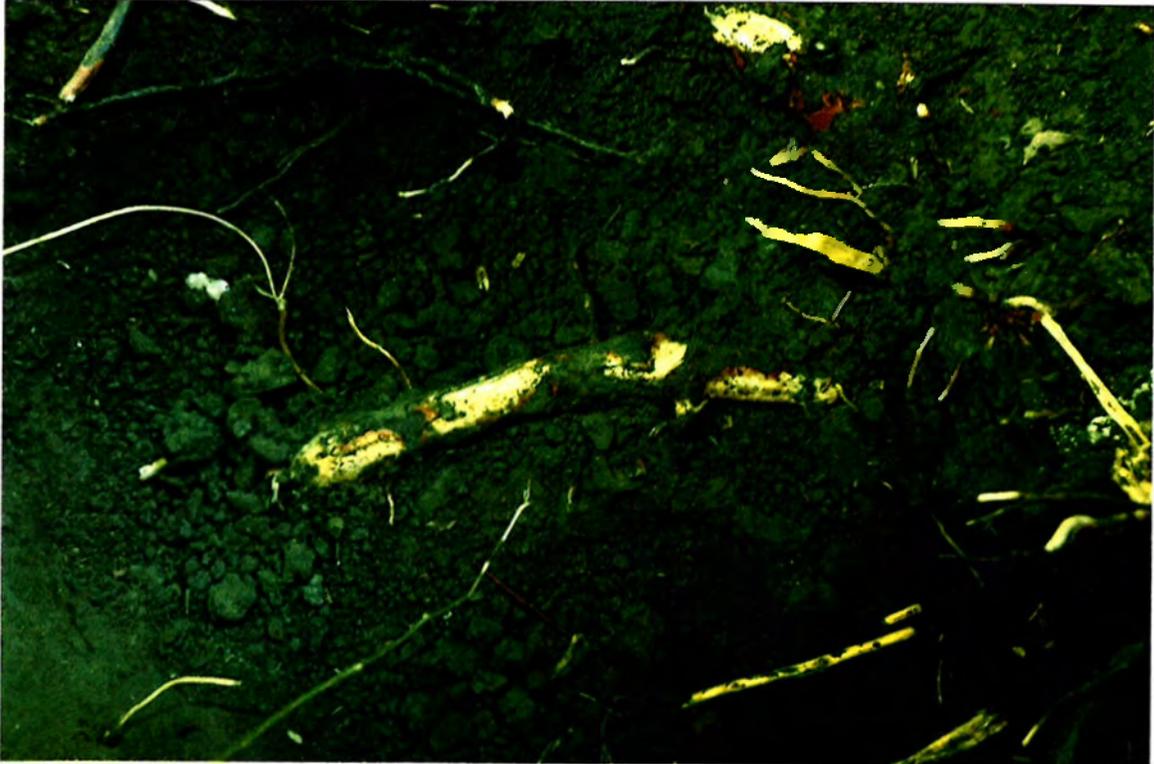


Photo B-26. Crown of Green Ash (Tree T-06)



Photo B-27. Bole of Tree T-06



Photo B-28. Vegetation around Tree T-06 facing E



Photo B-29. Flags denoting distribution of roots around T-06



Photo B-30. Deepest root at Tree T-06

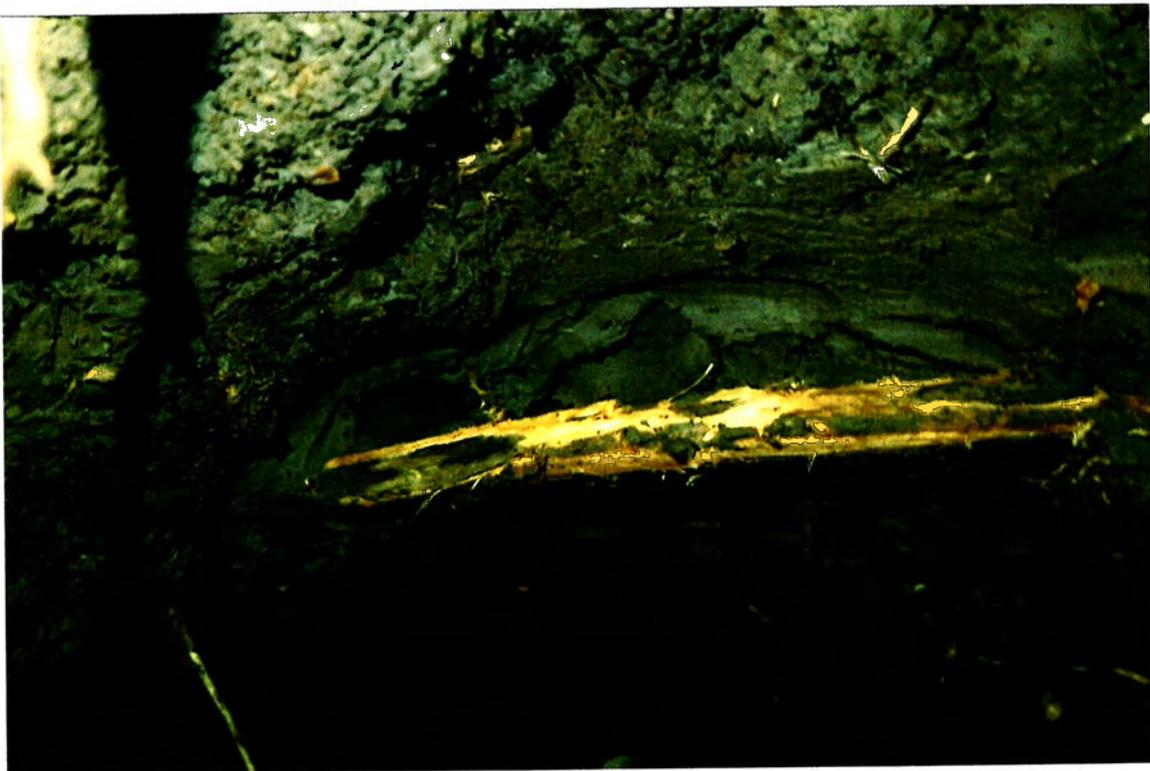


Photo B-31. Crown of Water Oak (Tree T-07)



Photo B-32. Bole of Tree T-07



Photo B-33. Vegetation at Tree T-07 facing S



Photo B-34. Flags denoting distribution of roots around Tree T-07



**Photo B-35. Deepest root on Tree T-07**



**Photo B-36. Stand of St. Augustine Grass facing N at Observation H-01**



Photo B-37. Vegetation growing to W of H-01



Photo B-38. Vegetation growing to N of H-01



Photo B-39. Vegetation to SW of H-01



Photo B-40. Root distribution at H-01 (Very Abundant, 0-2 inches; Abundant to Common, 2-8 inches)



Photo B-41. Root distribution at H-01 (Common to Sparse, 8-12 inches)



Photo B-42. Root distribution at H-01 (Sparse, 12-17 inches)



Photo B-43. Root distribution at H-01 (Very Sparse, 17-19 inches; Very Sparse-None 19-24 inches)

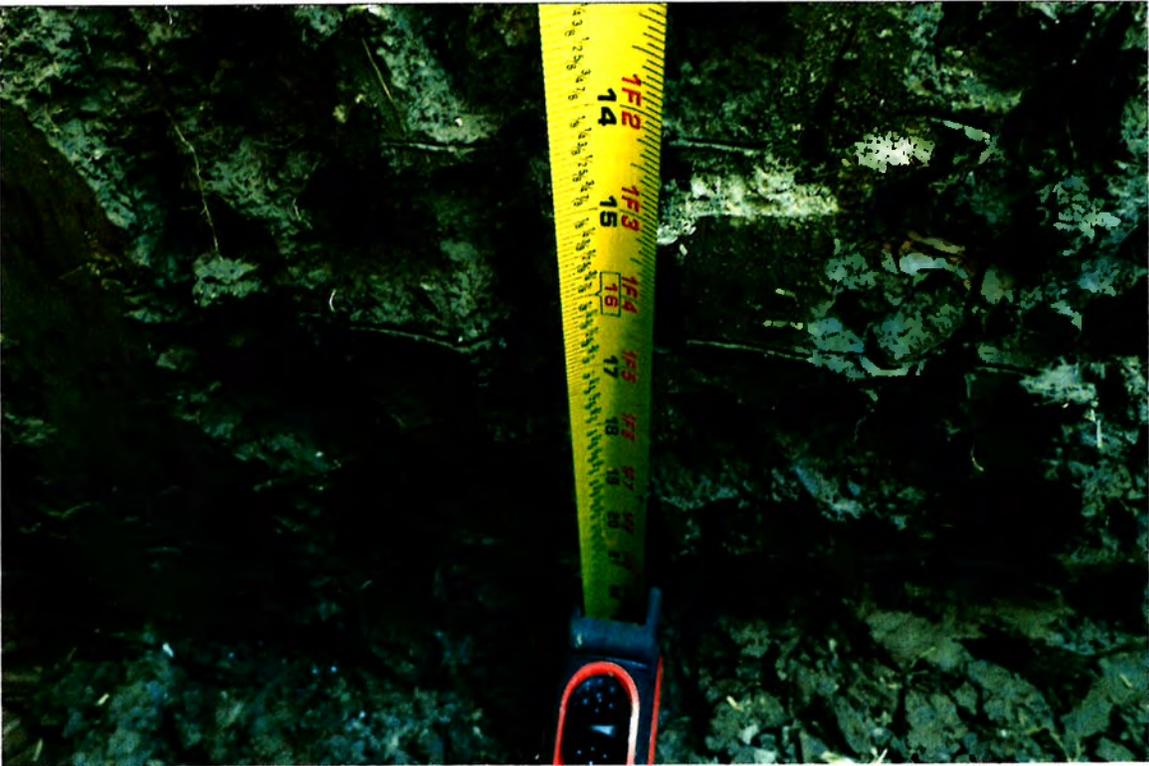


Photo B-44. Stand of mixed species at H-02 facing east



Photo B-45. Vegetation growing at H-02 facing N



Photo B-46. Vegetation growing at H-02 facing SE



Photo B-47. Vegetation growing at H-02 facing W



Photo B-48. Root distribution at H-02 (Abundant, 0-2.5 inches)



Photo B-49. Root distribution at H-02 (Common, 2.5-9 inches)



Photo B-50. Root distribution at H-02 (Sparse, 9-13 inches)

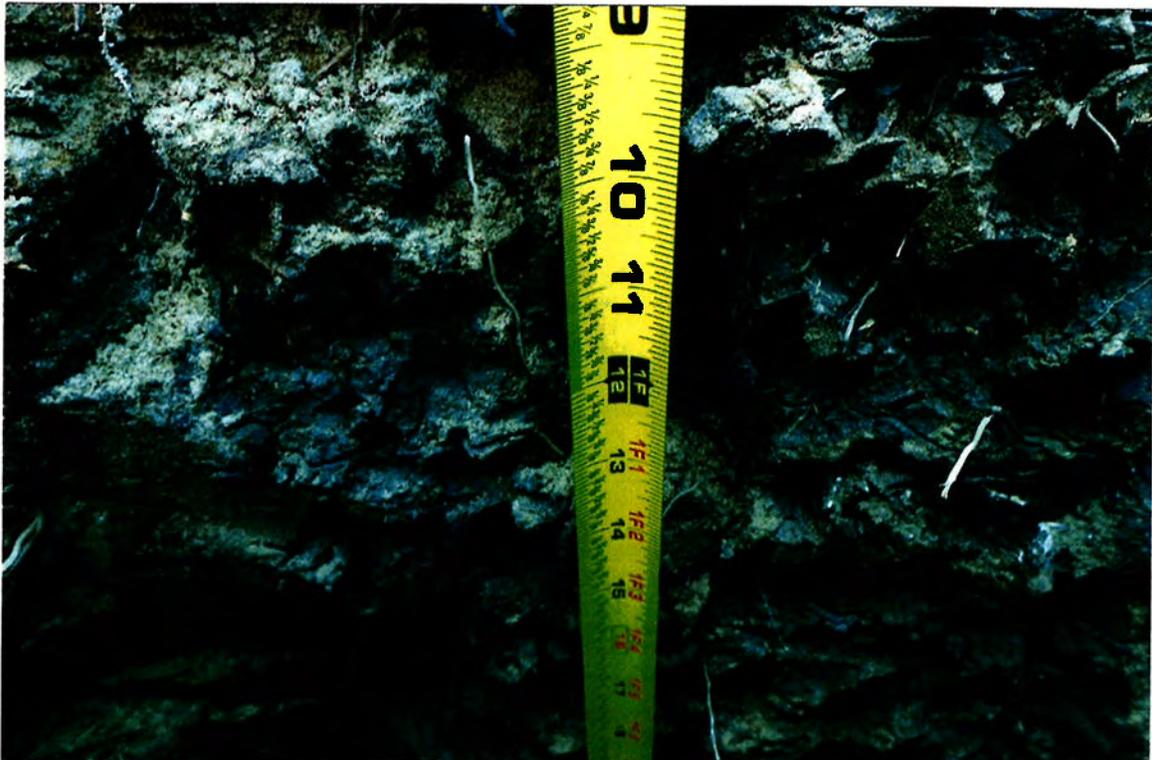


Photo B-51. Root distribution at H-02 (Very Sparse, 13-17 inches)



Photo B-52. Root distribution at H-02 (Very Sparse to None, 17-24 inches)



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Parish of Plaquemines  
State of Louisiana

**Appendix C  
Root Data Forms**

Date: 3/30/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: T-01

Property/Project: Hero Lands

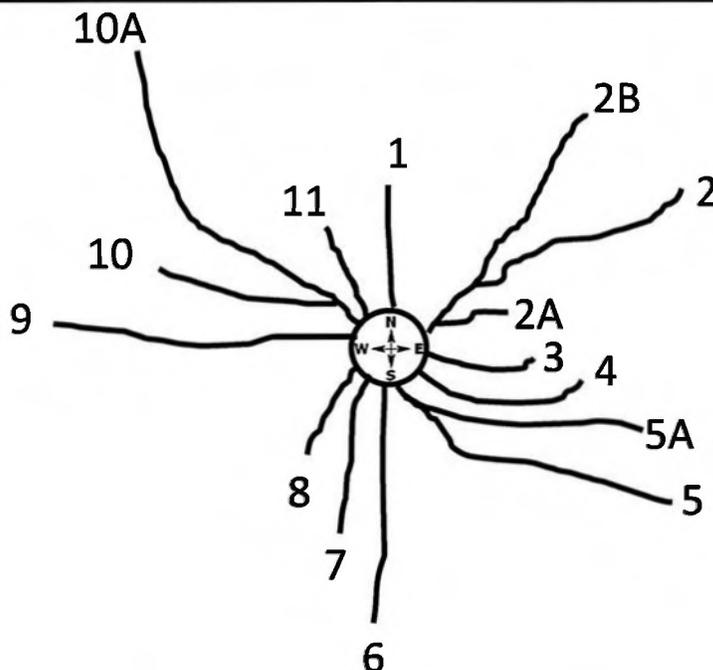
Geographic Coordinates: N 29° 48' 40.8" W 90° 00' 46.1"

Other Information:

Species: **Water Oak**

DBH= 9.9 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	36"	1.0"	32"	7	47"	7.5"	36"
2	70"	8.5"	49"	8	41"	6.5"	41"
2A	36"	7.5"	36"	9	63"	2.5"	34"
2B	75"	6.0"	60"	10	53"	5.0"	48"
3	41"	3.5"	41"	10A	69"	1.5"	61"
4	42"	6.5"	40"	11	22"	2.0"	22"
5	77"	3.5"	57"				
5A	55"	6.5"	46"				
6	74"	3.0"	74"				



\*Not to scale

Date: 3/30/2020

By: L.F. Holloway, M. Greene &  
A. Jones

Observation ID: **T-02**

Property/Project: Hero Lands

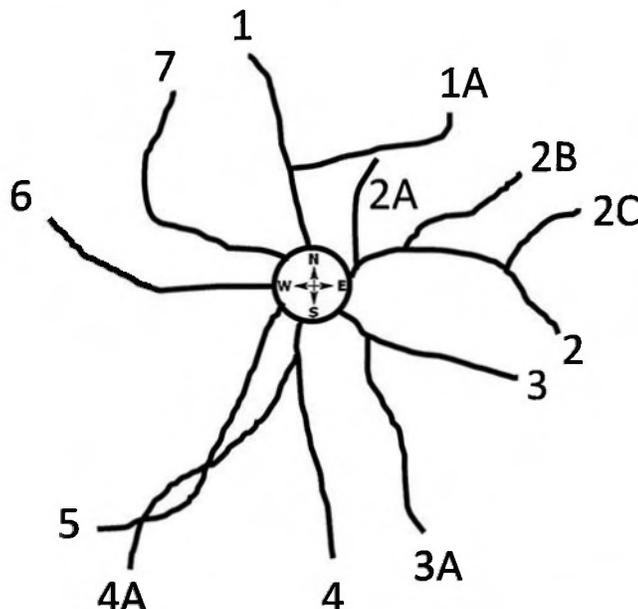
Geographic Coordinates: N 29° 48' 37.1" W 90° 00' 47.5"

Other Information:

Species: **Sweetgum**

DBH= 15.1 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	60"	10.5"	53"	4A	96"	6.0"	45"
1A	50"	13.5"	39"	5	96"	16.0"	21"
2	74"	7.5"	58"	6	86"	10.0"	75"
2A	48"	13.5"	42"	7	60"	14.5"	46"
2B	39"	6.0"	32"				
2C	55"	6.5"	55"				
3	50"	11.5"	46"				
3A	71"	13.0"	47"				
4	80"	8.5"	52"				



\*Not to scale

Date: 3/31/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: **T-03**

Property/Project: Hero Lands

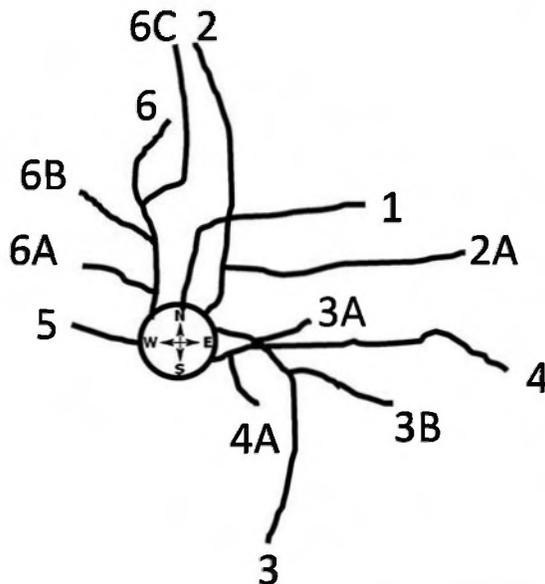
Geographic Coordinates: N 29° 48' 49.7" W 90° 00' 44.2"

Other Information:

Species: **Sugarberry**

DBH= 15.2 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	90"	2.0"	78"	6	74"	3.0"	74"
2	93"	3.0"	81"	6A	35"	9.0"	35"
2A	108"	Surface	--	6B	36"	8.5"	36"
3	106"	10.0"	83"	6C	125"	3.5"	125"
3A	28"	11.5"	28"				
3B	69"	15.5"	58"				
4	118"	2.0"	103"				
4A	30"	2.5"	30"				
5	14"	5.5"	14"				



\*Not to scale

Date: 3/31/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: T-04

Property/Project: Hero Lands

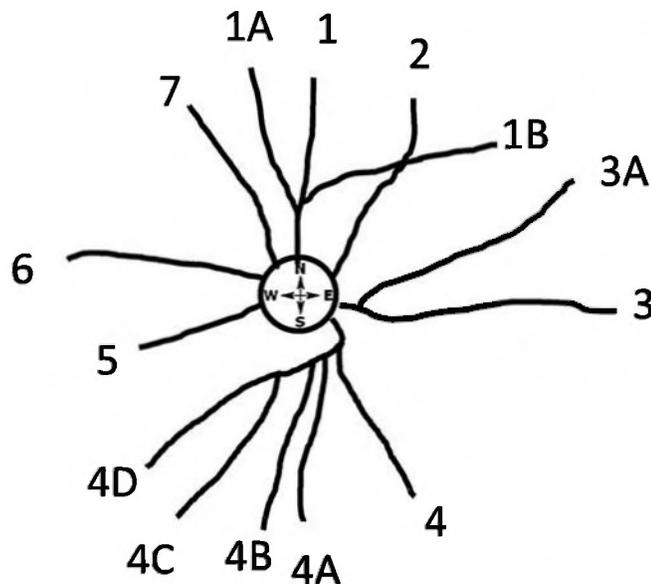
Geographic Coordinates: N 29° 48' 49.3" W 90° 00' 44.4"

Other Information:

Species: American Elm

DBH= 13.5 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	40"	16.0"	40"	4C	63"	9.0"	36"
1A	32"	13.0"	32"	4D	36"	6.0"	36"
1B	45"	14.0"	32"	5	40"	4.0"	40"
2	35"	11.0"	35"	6	50"	4.5"	50"
3	66"	8.0"	62"	7	44"	2.0"	22"
3A	53"	10.0"	44"				
4	46"	20.0"	46"				
4A	34"	15.5"	34"				
4B	33"	3.0"	25"				



\*Not to scale

Date: 4/1/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: T-05

Property/Project: Hero Lands

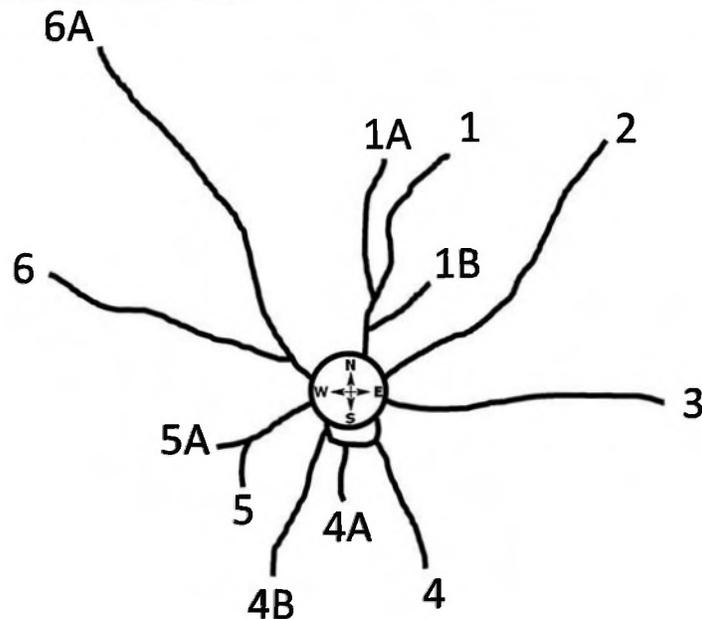
Geographic Coordinates: N 29° 48' 38.1" W 90° 00' 49.0"

Other Information: Tree is in good condition

Species: **Box Elder**

DBH= 10.7 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	66"	9.0"	52"	5A	44"	7.0"	28"
1A	54"	5.0"	54"	6	67"	3.5"	54"
1B	34"	7.0"	29"	6A	67"	3.0"	39"
2	68"	Surface	--				
3	48"	4.0"	28"				
4	32"	6.0"	32"				
4A	20"	4.0"	20"				
4B	52"	4.0"	32"				
5	44"	10.0"	28"				



\*Not to scale

Date: 4/1/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: T-06

Property/Project: Hero Lands

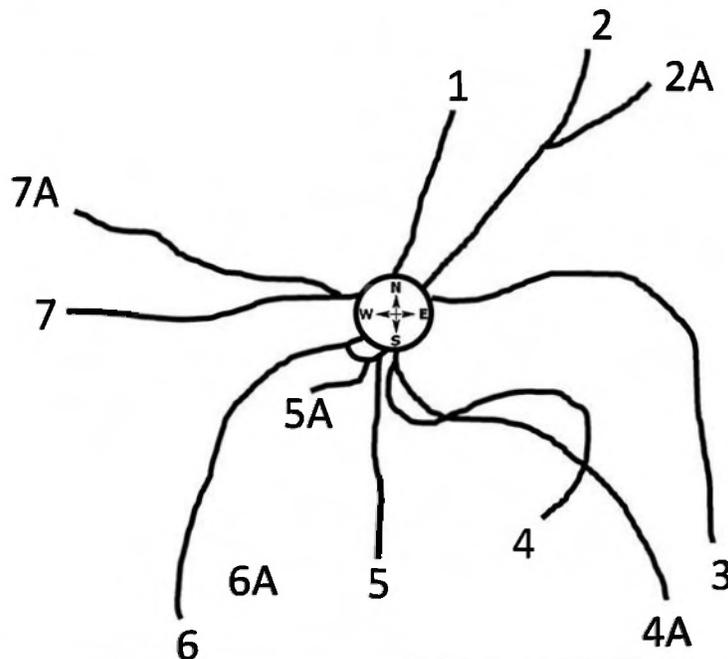
Geographic Coordinates: N 29° 48' 36.0" W 90° 00' 46.1"

Other Information:

Species: **Green Ash**

DBH= 7.6 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	36"	4.5"	30"	6A	38"	7.0"	24"
2	51"	5.0"	24"	7	43"	5.75"	18"
2A	43"	N/A	--	7A	40"	8.0"	31"
3	61"	5.5"	42"				
4	48"	9.5"	25"				
4A	41"	4.5"	35"				
5	41"	5.0"	33"				
5A	23"	6.5"	20"				
6	48"	3.5"	34"				



\*Not to scale

Date: 4/3/2020

By: L.F. Holloway, P. Ritchie & A.  
Jones

Observation ID:

**T-07**

Property/Project: Hero Lands

Geographic Coordinates: N 29° 48' 34.9" W 90° 00' 48.6"

Other Information:

Species: **Water Oak**

DBH= 16.5 inches

Root No.	Length	Depth to Top	Distance on Root	Root No.	Length	Depth to Top	Distance on Root
1	163"	7.5"	81"	6	38"	9.0"	38"
1A	88"	9.0"	88"	7	108"	2.25"	92"
1B	119"	Surface	--	8	104"	4.0"	104"
2	76"	3.0"	67"	8A	136"	5.0"	136"
3	124"	3.0"	86"	9	62"	Surface	--
3A	123"	2.5"	77"	10	106"	1.25"	106"
3B	175"	2.0"	90"	10A	85"	Surface	--
4	68"	7.0"	33"	10B	67"	1.75"	67"
5	111"	Surface	--	10C	95"	3.25"	95"
5A	65"	1.0"	55"	11	88"	2.25"	70"
5B	88"	5.5"	63"	12	44"	3.5"	44"
5C	41"	Surface	--	12A	120"	2.0"	109"

\*Root Distribution for T-07 on following page

Date: 4/3/2020

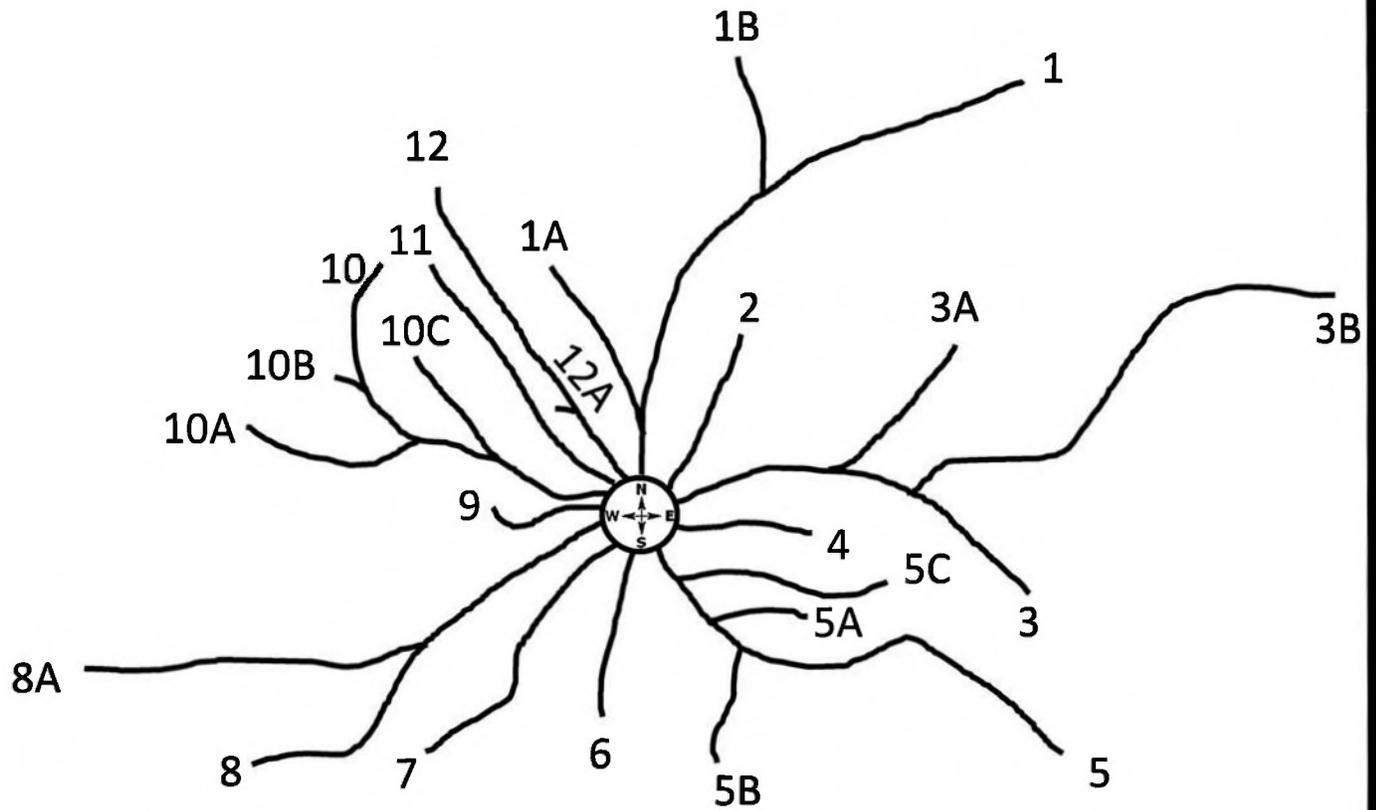
By: L.F. Holloway, P. Ritchie & A. Jones

Observation ID: T-07

Property/Project: Hero Lands

Geographic Coordinates: N 29° 48' 34.9" W 90° 00' 48.6"

Species: **Water Oak**



\*Not to scale

Date: 4/27/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: H-01

Property: Hero Lands

Geographic Coordinates: N 29° 49' 12.7" W 90° 00' 26.9"

Other Information: Some Powderpuffs and Occasional Frog Fruit

Species: Saint Augustine

<b>Depth (In)</b>	<b>Abundance of Roots</b>
1	Very Abundant
2	Very Abundant
2	Abundant to Common
3	Abundant to Common
4	Abundant to Common
5	Abundant to Common
6	Abundant to Common
7	Abundant to Common
8	Abundant to Common
8	Common to Sparse
9	Common to Sparse
10	Common to Sparse
11	Common to Sparse
12	Common to Sparse
12	Sparse (very fine roots)
13	Sparse (very fine roots)
14	Sparse (very fine roots)
15	Sparse (very fine roots)
16	Sparse (very fine roots)
17	Sparse (very fine roots)
17	Very Sparse (fine rootlets)
18	Very Sparse (fine rootlets)
19	Very Sparse to None
19-24	Very Sparse to None

Date: 4/27/2020

By: L.F. Holloway, M. Greene & A. Jones

Observation ID: H-02

Property: Hero Lands

Geographic Coordinates: N 29° 49' 11.7" W 90° 00' 31.3"

Other Information: Dallis Grass, Powderpuff, Buttercup

Species: Frog Fruit

<b>Depth (In)</b>	<b>Abundance of Roots</b>
1	Abundant
2.5	Abundant
2.5	Common
3	Common
4	Common
5	Common
6	Common
7	Common
8	Common
9	Common
9	Sparse
10	Sparse
11	Sparse
12	Sparse
13	Sparse
13	Very Sparse
14	Very Sparse
15	Very Sparse
16	Very Sparse
17	Very Sparse
17-24	Very Sparse to None

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25<sup>TH</sup> Judicial District Court  
Parish of Plaquemines  
State of Louisiana

**Appendix D  
Resume and Compensation Schedule of Luther F. Holloway**

## **PERSONAL RESUME OF LUTHER F. HOLLOWAY**

**Address: 9269 Hwy. 124**

**Harrisonburg, Louisiana 71340**

**Telephone 318.744.5638**

### **EDUCATION**

**Ph.D. in Plant Pathology, Louisiana State University , Baton Rouge, Louisiana, 1971**

**Master of Science in Fisheries Biology (Emphasis in Estuarine Ecology), Louisiana State University, Baton Rouge, Louisiana, 1969.**

**Attended Oklahoma State University, Stillwater, Oklahoma, 1966-1967. Major: Zoology.**

**Bachelor of Science in Wildlife Management, Louisiana Tech University, Ruston, Louisiana, 1966. Major Courses: Botany, Zoology and Microbiology .**

### **EXPERIENCE**

**1974-Present: President, Holloway Environmental Services, Inc., Harrisonburg, LA and Vicksburg, MS; Owner, Luther Holloway Farms (1989-Present).**

**1973-1977: Research Botanist, Environmental Laboratory, U. S. Army Engineer Waterways Experiment Station, Vicksburg, MS.**

**1972-1973: Environmental Resources Specialist, U. S. Army Engineer District, New Orleans, LA.**

**1972-1972: Research Associate, Department of Entomology, LSU, Baton Rouge, LA.**

**1968-1971: Athletic Tutor, Athletics Department, LSU, Baton Rouge, LA. Courses: Biology, Agronomy & Statistics**

**1969-1971: Research Assistant , Department of Botany - Plant Pathology, LSU Baton Rouge, LA.**

**1967-1969: Graduate Research Assistant, Departments of Zoology and Forestry, LSU, Baton Rouge, LA.**

**1966- 1967: Graduate Research Assistant, Department of Zoology, Oklahoma State University, Stillwater, Oklahoma.**

**1965-1966: Undergraduate Laboratory Instructor, Department of Botany and Bacteriology, Louisiana Tech University, Ruston, LA.**

## **PARTIAL WORK EXPERIENCE**

### **2000-Present:**

1. Dr. Holloway conducted investigations of the impacts of petroleum production and spills on agricultural and timbered areas in oil fields in Louisiana in areas ranging from near the Arkansas line to coastal wetland areas. He reviewed the impacts on soils, crops and natural vegetation on farms, wooded sites and marshes and assisted in site remediation measures along with pesticide uses and their effects.
2. Dr. Holloway assessed the impacts from a gasoline leak from a pipeline in Red River Parish. He assessed soil samples for petroleum hydrocarbons and pesticides in cropland soils and reviewed growth of crops in areas around the leak site. He also reviewed pesticide application procedures and potential impacts from adjuvants and defoliation agents.
3. He conducted a review of the plant communities and fish populations in and around the Bayou Corne sinkhole in Assumption Parish, Louisiana.
4. He prepared plans and oversaw remediation measures for limiting soil erosion on remediated disposal pits in an old oil field in Louisiana.
5. Dr. Holloway conducted numerous reviews of plant root zone distribution, depths and effective root zone depths in croplands, wetlands, pastures and forests in Louisiana and prepared remediation plans for salt impacted sites.
6. Dr. Holloway conducted investigations of the impacts of petroleum pipelines in marshes of Louisiana. He also reviewed the impacts of navigation in and around pipelines in marshes in Terrebonne, Plaquemines, St. Bernard and Jefferson Parishes in Louisiana. He studied changes in marsh ecosystems over time for vegetative communities, soil disturbance, soil erosion and water regimes. He also studied the impacts of animal herbivory on marshes along pipelines and studied wave surges from boat and barge traffic to pipeline canals along the Gulf Intracoastal Waterway (GIWW).
7. He conducted a review of impacts of oil production and production facility remediation measures for sites in Louisiana. He conducted investigations on soils, vegetation and potential remediation measures in marshes and chenieres at Johnson's Bayou in Cameron Parish.
8. Dr. Holloway conducted assessments of impacts to vegetation along a brine pipeline in St. James Parish. He evaluated conditions of herbaceous vegetation and timber at leak sites and unimpacted areas. Part of the work involved blow down of trees along the pipeline corridor and adjacent areas. He observed root zones and depths of the roots of trees that had been affected by wind damage.

### **1990-2000**

1. Dr. Holloway conducted investigations on the impacts of oil spills in streams at

several locations in Oklahoma, Texas and Kansas. He studied spill impacts on fishes and macro-microinvertebrate populations of the streams and impacts on stream beds and growth of riparian vegetation. He assessed residual quantities of oil in stream beds and banks and associated marshes and recommended cleanup and remediation measures. He evaluated plant stands for damages along pipeline corridors and impacts of oil on plants and plant growth.

2. He investigated the impacts of salinity and increased flooding regimes on trees and herbaceous vegetation downstream of oil production sites at numerous locations in Oklahoma.
3. He studied the growth of hardwood trees downstream of a water flood unit and viewed root zones and depths of pecan trees in an unmanaged grove. He assessed the conditions of trees impacted by increased soil salinity/saturation of several creeks in southern Oklahoma. He also conducted investigations of faunal populations of ponds and streams located in oil production areas and in areas surrounding oil leaks and spills.
4. He conducted studies of impacts of oil production and distribution facilities on vegetative communities and compared tree growth in petroleum production areas to non-production sites in Mississippi. He compared soils in control versus impacted sites for tree growth and evaluated forage production on impacted sites. He also investigated impacts of naturally occurring radioactive materials (NORM) on vegetation in oil fields.
5. Dr. Holloway studied the impacts of spills from drilling mud pits on fauna and flora of adjacent lands and streams in Oklahoma and worked on wetlands permitting for construction of two solid waste landfills in Texas. He also conducted a review of wetland status and vegetative and faunal impacts (aquatic and terrestrial) of a proposed hurricane protection levee for Louisiana Offshore Oil Ports, Inc. (LOOP), in southern Louisiana.
6. Dr. Holloway conducted a study of stream meander processes on three locations on the Canadian River in Oklahoma and on the Sabine River in Louisiana. He also investigated the impacts of alleged flooding regimes on timber and farmlands adjacent to a highway in Oklahoma. He studied beaver herbivory and dam construction on the stream crossing the highway.
7. As owner of several farms in Louisiana, Dr. Holloway is intimately involved with the maintenance and upkeep of the farms. He conducts routine maintenance of roads, ditches and fields and conducts all surveys related to drainage, leveling and road construction on his properties. He reviews soil conditions, fertility needs and liming requirements on his farms. He also farmed 150 acres of crawfish for several years on one of his farms.

### **1987-1990**

1. Dr. Holloway served as project director for the Attorney General of the State of Florida to determine sovereign lands along streams of the Central Florida Phosphate District. As part of a long-term study, he served as director of an interdisciplinary team of hydrologists, soil scientists, photogrammetrists, geologists and botanists to study ordinary high water lines (OHWLs) and impacts of phosphate mining on stream riparian areas.
2. He served as a consultant to the Corps of Engineers in the evaluation of aquatic faunal and plant community impacts of dredging and maintenance activities on the Yalobusha River in Mississippi. He also prepared mitigation plans for replacement of wetlands damaged by construction activities in private developments.
3. He conducted investigations of stream plant populations and aged trees for determining successional patterns in association with stream meander processes in Oklahoma. Some of the work involved stream movements that affected the ownership of lands related to oil royalties on accretion/reliction properties contiguous to rivers.

### **1984-86**

1. Dr. Holloway served as a consultant to several landowners in Texas, Louisiana, Arkansas, Mississippi and Florida for determination of environmental impacts of construction and development activities for solid waste plants, housing developments and agricultural operations. Much of the work involved determination of wetland status of the properties and coordination of mitigation plans with local, state and federal agencies.
2. He conducted a review of the 1985 Food Security Act to determine the impacts of wetland provisions to farmers in Louisiana and Arkansas. He coordinated the work with the U. S. Soil Conservation Service to determine wetland status of farmlands and impacts of farming activities on wetlands. He participated in a study of timber management practices on wildlife for a large landowner in Louisiana and Mississippi.
3. Dr. Holloway served as a consultant to Monroe County, Florida, for development of a land use/land management plan for future development activities on the Florida Keys. He was a member of a team that considered the environmental impacts related to construction activities and all other perturbations associated with past and future development on the Keys with particular emphasis on wetlands and wetland quality.
4. He acted as a consultant to Boise-Cascade in evaluating their timber land management programs in Louisiana and conducted an OHWL investigation on the Yazoo River in Mississippi.
5. Dr. Holloway served as a consultant to several large landholders in Louisiana,

Mississippi, Arkansas and Florida for determination of wetland status on their property under Section 404 of the Clean Water Act. As part of these studies he considered the plant community types, soil conditions, discharges and flooding durations to the properties for contiguous/adjacent streams.

6. He served as a contractor and project manager for three extensive studies involving OHWL determinations, riparian soil types, and plant community types along the Yazoo, Ouachita and Black Rivers. The work was conducted for the Vicksburg District of the U. S. Army Corps of Engineers and involved approximately 500 river miles of these streams.

#### **1981-84**

1. During 1974-1984 Dr. Holloway owned a spray and consulting service that involved pest control and applications of fungicides, insecticides, herbicides and fertilizers on ornamental, turf and fruit trees. He routinely diagnosed plant diseases, insect damage and herbicide/air pollution damage on ornamentals and shade trees and evaluated trees and shrubs for casualty losses. He also evaluated soil/nutrient requirements for ornamental and fruit trees. He also taught pesticide use/safety to Department of Defense personnel. He has held numerous licenses in pesticide/herbicide application in Mississippi, Louisiana and Texas.
2. Dr. Holloway conducted an investigation of the effects of surficial aquifer contamination of irrigation waters from saltwater disposal wells for Gulf Oil Company in Wichita, Kansas. The work emphasized the impacts of salinity contaminated irrigation water on orchards and considered pesticide uses and generalized orchard practices on irrigated lands.
3. He served as a consultant to large landholders in Louisiana and Mississippi for conversion of woodlands to agriculture.
4. Dr. Holloway conducted an investigation of the alternatives for dredged material disposal in Mobile Bay for maintenance of Mobile Harbor. The study involved the sizing of disposal sites, productive uses of the materials and alternative means for transportation of dredged material and movement of materials out of the Mobile Bay area. Dr. Holloway also addressed the impacts of the disposal operations on plant and aquatic faunal communities.
5. During 1981-82, Dr. Holloway conducted an ecological assessment of the impacts of increased flooding regimes on vegetation due to construction of a new federal highway crossing on the Tombigbee River near Fulton, Mississippi. The study was conducted in a bottomland hardwood area and emphasized durations of flooding on trees and associated wetland systems upstream of a highway corridor.

## **1978-80**

1. Dr. Holloway served as a project director for a multidisciplinary team for conducting OHWL investigations on the Peace River in the Central Florida Phosphate Region. As project director, he was responsible for integrating botanical, geologic, soils, photogrammetric and hydrologic studies for sovereignty boundaries for the State of Florida and for consideration of the impacts of mining and disposal activities on the aquatic resources in the area.
2. Dr. Holloway participated in a multidisciplinary study assessing the impacts of construction of the Tennessee-Tombigbee Waterway . The work involved the assessment of the change in the hydrologic regime and increased siltation from construction of the canal section of the waterway on adjacent lands with emphasis on bottomland forests and buildup of soil/silt over tree trunks and roots.
3. He completed a study of the impacts associated with construction of a hazardous waste facility in Macon County, Missouri. The work involved habitat delineations and wildlife populations in a two-mile perimeter around the proposed facility. Specific impacts associated with hazardous waste transfer and storage were addressed in the study along with determination of general construction impacts.
4. He conducted numerous studies on the OHWL of river systems in Florida, Mississippi, Arkansas, Louisiana and Ohio. He also conducted several detailed investigations concerning wetland delineations. Much of this work was conducted for federal agencies to assist them in the location and evaluation of wetland systems and the determination of OHWL for navigation servitude and sovereignty boundaries.
5. Dr. Holloway conducted a Section 404(b) assessment of the impacts of maintenance, dredging and disposal on the Black Warrior and Tombigbee Rivers in Alabama. The work for the Mobile District of the Army Corps of Engineers involved assessment of disposal sites, sizing of the disposal sites and the impacts on water quality from effluent from the disposal operations. He also conducted an OHWL study of the Ouachita River in the Columbia Pool in Louisiana.

## **1973-77**

1. As a research botanist for the Waterways Experiment Station of the Army Corps of Engineers in Vicksburg, Mississippi, Dr. Holloway had the primary technical responsibility for botanical studies in a \$30+ million dollar research study of dredged material disposal operations of the Army Corps of Engineers. As a member of the habitat development project, he conducted investigations on the reclamation of dredged material through revegetation with marsh and upland vegetation. He devised marsh restoration/mitigation schemes for tidal wetlands in Florida, Texas, California, Georgia, Virginia and Alabama. He also investigated the

- potential for establishment of agronomic crops for dredge disposal sites.
2. Dr. Holloway monitored research projects in heavy metal uptake of plants from dredged material in both laboratory and field studies. He assisted in writing the Section 404 regulations of the Clean Water Act in 1975 for the Chief of Engineers. He also provided the sole technical expertise for presentation of the regulations by a special Corps/EPA task force at numerous public hearings across the United States.
  3. He assisted in the design and participated in the monitoring of a program to determine the uptake of nutrient and toxic materials from effluents of a dredge disposal site at Savannah Harbor, Georgia. In this study he assisted in making plant selections, sizing of runways and volumes of material for the study.

### **1972-1973**

1. As an environmental resources specialist with the New Orleans District of the Army Corps of Engineers, Dr. Holloway provided input for development of environmental impact studies for various civil works projects in Louisiana, Arkansas and Texas. The work involved the assessment of impacts on flora and fauna, esthetic qualities, sociological factors and safety requirements for proposed and ongoing civil works projects.
2. He also served as a member of a special team to the Lower Mississippi Valley Division of the Corps of Engineers for preparing a report on the development of Gulf Coast Deep Water Port Facilities for oil import by supertankers. He prepared the environmental assessment for the Central Gulf Region (southern Louisiana) and participated in preparation of the environmental impact assessment for locating and operating a deep offshore oil terminal at areas ranging from western Florida to southern Texas. The study addressed the environmental impacts on aquatic and coastal plant and animal communities from oil importation and handling activities and associated pipeline distribution systems. He also provided technical input for biological/ecological impacts for the Water for Texas Plan routings from the Mississippi River.

### **EXPERT WITNESS ACTIVITIES**

Dr. Holloway has worked as an expert witness for the U. S. Army Corps of Engineers, U. S. Department of Justice, states of Louisiana and Florida, and numerous corporate and individual clients. He has testified in the areas of botany and plant ecology, agronomy, petroleum production impacts to agriculture and floral-fauna components, wetland soils and hydrology, pesticides, fisheries and wildlife ecology, environmental impacts and ordinary

high water lines and wetlands. He has testified in numerous U. S. District Courts, U. S. Court of Claims and state district courts in Louisiana, Mississippi, Florida and Oklahoma. He has also testified in administrative hearings in Florida, Texas, Louisiana and Oklahoma.

**HOLLOWAY ENVIRONMENTAL SERVICES, INC.  
COMPENSATION SCHEDULE**

**JANUARY 1, 2020**

**I. Personnel**

Luther F. Holloway, Ph.D.

Cost of services is computed at \$275.00/hour for field work with a four (4) hour minimum per day, including travel time. Work and travel times exceeding eight (8) hours per day will be charged at \$275.00/hour. Non-field work including testimony is \$275.00/hour.

Associates and Field/Laboratory Assistants as needed per project.

**II. Travel and Subsistence**

Lodging expenses at cost; meals \$55.00/day.

Mileage costs are computed at a rate of eighty (\$0.80) cents per mile for company/personal vehicles (w/ trailer \$1.00 per mile). Rental vehicles charged at cost.

**III. Purchased Services**

Purchased services are charged at cost and include, but are not limited to, such items/activities as shipping/mailing, map production and drafting, computer and word processing, subcontracted services and expendable supplies.

**IV. Equipment**

Rental or leased equipment charged at cost.

All terrain ATVs charged at \$125.00/day.

Heavy duty 4x4 RTVs charged at \$200/day.

Company-owned backhoes, dozers, tractors and boats/motors quoted per job.

**V. Terms**

Invoices are normally submitted monthly within ten days after the end of the month and are payable within thirty (30) days of the date of the invoice.

Late payments will incur interest rates as listed below, based on the number of days past the 30 day due date of the invoice:

01-30 days late ..... One & one-half percent (1.5%);

31-60 days late ..... Two & one-half percent (2.5%);

≥ 61 days late ..... Five percent (5.0%) compounded monthly until paid & Cease All Operations.

Prompt payment .....One percent (1.0%) 21 days or less from date of bill.

**VI. Revision of Compensation Schedule**

Rates of items in the Compensation Schedule above are good for a period of one (1.0) year per individual project. Projects extending one year past the date of notice to proceed will be charged at revised rates based on the discretion of the management of Holloway Environmental Services, Inc.

**Expert Report and Vegetation Root Study of  
The Hero Lands Co., L.L.C. Properties in the Stella Oil Field  
Plaquemines Parish, Louisiana  
Luther F. Holloway**

*Hero Lands Co., L.L.C*  
*versus*  
*Chevron U.S.A., Inc. et al.*  
Docket 64-320  
25<sup>TH</sup> Judicial District Court  
Parish of Plaquemines  
State of Louisiana

**Appendix E  
Testimony In Last Four+ Years**

## TESTIMONY IN LAST FOUR+ YEARS

### 1. Depositions

*Carolyn R. Bunch et al. v. Brighton Energy Co. et al.* Docket No. C-43-11. 31<sup>ST</sup> Judicial District Court, Parish of Jefferson Davis, State of Louisiana

*Sterling Sugars, Inc. v. BP America Production Company et al.* Docket No. 113095. 16<sup>TH</sup> Judicial District Court, Div. "E", Parish of St Mary, State of Louisiana

*Clyde Tucker et al. v. Shell Oil Company et al.* Docket No. 42934, Div. "B". 3<sup>RD</sup> Judicial District Court, Parish of Union, State of Louisiana

*David B. Currie et al. v. BP Production Co., et al.* Docket No. 10-18837; 38<sup>TH</sup> Judicial District Court, Parish of Cameron, State of Louisiana

*Joseph Dupont et al. v. Mobil E & P Southeast, Inc. et al.* Docket No. 52,090. 18<sup>TH</sup> Judicial District Court, Parish of Iberville, State of Louisiana

*Martha Zoe Moore et al. v. Denbury Onshore, LLC.* Docket No. 43526 Div "B". 5<sup>TH</sup> Judicial District Court, Parish of Richland, State of Louisiana

*Frank B. Allain et al. v. Exxon Mobil Corporation et al.* Docket No. 62,430 Div. "Ad Hoc". 18<sup>TH</sup> Judicial District Court, Parish of Iberville, State of Louisiana

*State of Louisiana and the Iberville Parish School Board v. BP America Production Company et al.* Case No. 72,605 Div. "A", 18<sup>TH</sup> Judicial District Court, Parish of Iberville, State of Louisiana

*Ritchie Grocer Co. v. 2H Inc.,* Civil No. 14-CV-2868, United States District Court, Western District of Louisiana, Alexandria Division

*New 90, LLC, et al. v. Grigsby Petroleum, Inc., et al.* Docket No. 130528 Div. "E", 16<sup>TH</sup> Judicial District Court, Parish of St. Mary, State of Louisiana

### 2. Administrative Hearing

State of Louisiana Department of Natural Resources, Office of Conservation. In Re: Docket No. Env-L-2015-01. Martha Zoe Moore, Et Al. v. Denbury Onshore, L.L.C. U.S.D.C.-Western District, Monroe Division. Civil Action No. 3:14-CV-913